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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.
08/470,489	06/06/95	MONTAGNIER L	2356.0014-09

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EXAMINER	
PARKIN, J	

ART UNIT	PAPER NUMBER
1648	25

DATE MAILED: 01/22/99

Please find below and/or attached an Office communication concerning this application or proceeding.

Commissioner of Patents and Trademarks

Office Action Summary

Application No.	Applicant(s)
08/470,489	Montagnier et al.
Examiner	**Group Art Unit**
Jeffrey S. Parkin, Ph.D.	1648

☒ Responsive to communication(s) filed on *26 Oct 1998* .

☐ This action is **FINAL.**

☐ Since this application is in condition for allowance except for formal matters, **prosecution as to the merits is closed** in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11; 453 O.G. 213.

A shortened statutory period for response to this action is set to expire *3* month(s), or thirty days, whichever is longer, from the mailing date of this communication. Failure to respond within the period for response will cause the application to become abandoned. (35 U.S.C. § 133). Extensions of time may be obtained under the provisions of 37 CFR 1.136(a).

Disposition of Claims

☒ Claim(s) *72-89* is/are pending in the application.

Of the above, claim(s) _____ is/are withdrawn from consideration.

☐ Claim(s) _____ is/are allowed.

☒ Claim(s) *72-89* is/are rejected.

☐ Claim(s) _____ is/are objected to.

☐ Claims _____ are subject to restriction or election requirement.

Application Papers

☐ See the attached Notice of Draftsperson's Patent Drawing Review, PTO-948.

☐ The drawing(s) filed on _____ is/are objected to by the Examiner.

☐ The proposed drawing correction, filed on _____ is ☐approved ☐disapproved.

☐ The specification is objected to by the Examiner.

☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. § 119

☐ Acknowledgement is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d).

☐ All ☐ Some* ☐ None of the CERTIFIED copies of the priority documents have been

☐ received.

☐ received in Application No. (Series Code/Serial Number) _____ .

☐ received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

*Certified copies not received: _____ .

☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. § 119(e).

Attachment(s)

☐ Notice of References Cited, PTO-892

☐ Information Disclosure Statement(s), PTO-1449, Paper No(s). _____

☐ Interview Summary, PTO-413

☐ Notice of Draftsperson's Patent Drawing Review, PTO-948

☐ Notice of Informal Patent Application, PTO-152

--- SEE OFFICE ACTION ON THE FOLLOWING PAGES ---

Response to Amendment

Amendment Pursuant to 37 C.F.R. § 1.129(a)

1. Since this application is eligible for the transitional procedure of 37 C.F.R. § 1.129(a), and the fee set forth in 37 C.F.R. § 1.17(r) has been timely paid, the finality of the previous Office action is hereby withdrawn pursuant to 37 C.F.R. § 1.129(a). Applicants' submission after final filed on 24 August, 1998, has been entered and claims 72 and 80 amended. Claims 72-89 are pending in the instant application.

35 U.S.C. § 112, First Paragraph

2. The following is a quotation of the first paragraph of 35 U.S.C. § 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

3. Claims 72-89 are rejected under 35 U.S.C. § 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. *In re Rasmussen*, 650 F.2d 1212, 211 U.S.P.Q. 323 (C.C.P.A. 1981). *In re Wertheim*, 541 F.2d 257, 191 U.S.P.Q. 90 (C.C.P.A. 1976). The claims are directed toward methods of detecting HIV-2 nucleic acids employing HIV-2 specific probes that are capable of hybridizing to said nucleic acids under the recited melting temperatures, or methods of preparing said probes. The claims reasonably encompass probes that are capable of hybridizing to **any** region of the HIV-2 genome including the 5' and 3'

long terminal repeats (LTRs), untranslated regions, and *gag*, *pol*, *env*, *vif*, *vpr*, *vpx*, *tat*, *rev*, and *nef* coding regions (see Fields *et al.* (1990) for a review of the genomic organization of the human and simian immunodeficiency viruses). However, the disclosure only provides a limited number of sub-genomic HIV-2 molecular cDNA clones (refer to pages 23, 25, 26, 28, 37, and 62). Specifically, the following clones were described: **E2**, **27-5**, **35-3**, **4.6**, **4.7**, and **4.8**. Moreover, the disclosure fails to provide sufficient guidance pertaining to the nucleotide sequence of the inserts contained within these clones with the exception of three sequences (e.g., the **U3/R** region of the LTR, ***gag***, and ***pol*** genes described on pages 56-61 and Figures 6 and 7). The skilled artisan would be capable of preparing probes from inserts released by restriction digestion from those clones for which sequence data is not available. Appropriately drafted claim language directed toward those embodiments would be acceptable (i.e., A method of detecting HIV-2 nucleic acids employing an HIV-2-specific probe consisting of a restriction fragment or insert released from a subgenomic HIV-2 molecular clone selected from the group consisting of pE2, pROD 27-5, ...). The skilled artisan would also be capable of preparing HIV-2-specific probes from those regions of the HIV-2 genome for which nucleotide sequences have been provided (e.g., the U3/R region of the LTR and *gag* and *env* coding regions). However, the skilled artisan would not be capable of preparing HIV-2 nucleic acids to those regions which are neither contemplated nor described by applicants.

Legal precedence dictates that conception of a chemical compound (e.g., a nucleic acid molecule) is not achieved until reduction to practice has occurred (*Amgen Inc. v. Chugai Pharmaceutical Co. Ltd.* 18 U.S.P.Q.2d 1016-1031 (C.A.F.C. 1991); *Fiers v. Sugano* 25 USPQ2d 1601-1607 (C.A.F.C. 1993); *In re Bell* 26 USPQ2d 1529-1532 (C.A.F.C. 1993); *In re Deuel* 34 U.S.P.Q.2d 1210-1216 (C.A.F.C. 1995)). As set

forth *supra*, applicants have only provide a limited number of nucleic acid molecules that could be employed in the claimed methodology. Nucleotide sequence disclosures or sub-genomic clones corresponding to other regions of the viral genome are not described.

4. Claims 72-89 are rejected under 35 U.S.C. § 112, first paragraph, because the specification does not reasonably enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention commensurate in scope with these claims. Applicants traverse and submit that the skilled artisan could make and use the claimed invention without undue experimentation. Applicants argue that using the teachings of the specification the skilled artisan could produce HIV-2-specific probes and detect HIV-2-nucleic acids. It was further argued that an adequate written description of the claimed invention was provided and that applicants need not disclose every species encompassed by the claims.

As set forth in the preceding paragraph, the Examiner agrees that the skilled artisan would be capable of preparing probes from inserts released by restriction digestion from those clones described in the specification for which sequence data is not available. The Examiner also agrees that the skilled artisan would be capable of preparing HIV-2-specific probes from those regions of the HIV-2 genome for which nucleotide sequences have been provided (e.g., the U3/R region of the LTR and *gag* and *env* coding regions). However, applicants are reminded that the claimed invention encompasses a broad genus including any HIV-2-specific probe, regardless of the nucleotide sequence or genomic region from which it was derived. Accordingly, and contrary to applicants' assertions, the skilled artisan would not be capable of preparing HIV-2-specific probes corresponding to those regions which are neither contemplated nor described by applicants (i.e., *pol*, *vif*, *vpr*, *vpx*, *tat*, *rev*, *nef*, or the U5 region of the

LTR). Moreover, it is not readily manifest how the skilled artisan could ascertain the correct hybridization parameters (i.e., determine the T_m) in the absence of information pertaining to the G/C content of the probe. Accordingly, when all of the aforementioned issues are considered *in toto*, it would clearly require undue experimentation from the skilled artisan to ascertain all the scientific parameters required to practice the claimed invention.

As disclosed *supra* in paragraph 3, appropriately drafted claim language directed toward probes derived from the inserts of those HIV-2 sub-genomic clones described in the specification, as well as, probes derived from the disclosed HIV-2 nucleotide sequences, would be acceptable.

35 U.S.C. § 112, Second Paragraph

5. Claims 72-89 are rejected under 35 U.S.C. § 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Applicants' arguments have been considered but are deemed to be moot in view of the new issues raised below.

The claims are incomplete for omitting essential positive methods steps, such omission amounting to a gap between the steps (refer to MPEP § 2173.05(q)). *Ex parte Erlich*, 3 U.S.P.Q.2d 1011 (Bd. Pat. App. & Inter. 1986). Applicants should clearly disclose those salient steps that are required to perform the claimed methodology. For instance, claim 72 simply recites vague and indefinite contact, washing, and detection steps. The claim fails to describe the location of the sample (i.e., bound to a solid-support or filter), the formation of a hybridization complex comprising the HIV nucleic acid and probe of interest, the removal of non-specifically bound probe, and appropriate detection means. 2) The reference to a washing step "under conditions for hybridization" in step b) is confusing since the precise "washing conditions" are not readily

apparent. Applicants are directed toward page 17 of the specification which provides support for the claimed methodology. It is suggested that applicants include the following limitations: A method of detecting human immunodeficiency virus type 2 (HIV-2) nucleic acids in a biological sample comprising the following steps: a) preparing and immobilizing nucleic acids (i.e., on a filter or other suitable solid support) obtained from the sample of interest; b) preparing an HIV-2-specific nucleic acid probe with the desired properties (i.e., wherein said probe is prepared or obtained from nucleotides 1-380 of the U3/R region of HIV-2 and displays a melting temperature of 42°C . . .); c) contacting the nucleic acids of step a) with the probe of step b) under hybridization conditions which promote the formation of a stable hybrid; d) washing the membrane or hybrid under conditions which result in removal of non-specifically bound probe; e) detecting the resulting hybrid of step c) using . . . .

Claim 80 also fails to include those salient characteristics of the preparative method. The following limitations are suggested: A method for preparing or producing a human immunodeficiency virus type 2 (HIV-2)-specific nucleic acid probe comprising the following steps: a) preparing a nucleic acid insert comprising an HIV-2-specific nucleic acid probe with the following properties . . .; b) introducing the insert into a suitable cloning vector to produce a recombinant vector; c) transforming/transfecting (or introducing) the recombinant vector of step b) into a competent or suitable cellular host that permits replication of the recombinant; d) lysing said cells to recover the recombinant nucleic acid of interest.

Claims 74 and 82 are confusing in their reference to a probe comprising nucleotides 1-380 wherein said nucleotides comprise the

indicated sequence. The disclosed sequence consists of nucleotides 1-380 (i.e., see Figure 6). Applicants may obviate the rejection by amending the claim language to simply recite that the probe comprises nucleotides 1-380 of the U3/R region or that the probe is obtained from nucleotides 1-380 or the U3/R region.

Claims 75-79 and 83-87 are confusing in their reference to an amino acid sequence comprising nucleotides of the indicated HIV-2 gene. Amino acids are distinct chemical entities from nucleic acids and neither compound is capable of "comprising" the other. Nucleic acids encode amino acids and peptides. Applicants may obviate the rejection by amending the claim language to include limitations indicating that the HIV-2-specific probes are prepared or obtained from the indicated nucleotides (e.g., nucleotides 1-1566 of the *gag* gene).

Claims 79 and 87 are vague and indefinite in their reference to an amino acid sequence consisting of "Leu *** Gly". Which amino acids should be included in this location? Which nucleotides encode this amino acid? Appropriate clarification is required.

Correspondence

6. Correspondence related to this application may be submitted to Group 1600 by facsimile transmission. The faxing of such papers must conform with the notice published in the Official Gazette, 1096 OG 30 (November 15, 1989). Official communications should be directed toward one of the following Group 1600 fax numbers: (703) 308-4242 or (703) 305-3014. Informal communications may be submitted directly to the Examiner through the following fax number: (703) 308-4426. Applicants are encouraged to notify the Examiner prior to the submission of such documents to facilitate their expeditious processing and entry.

7. Any inquiry concerning this communication should be directed to Jeffrey S. Parkin, Ph.D., whose telephone number is (703) 308-2227. The examiner can normally be reached Monday through Thursday from 8:30 AM to 6:00 PM. A message may be left on the examiner's voice mail service. If attempts to reach the examiner are unsuccessful, the examiner's supervisor, Chris Eisenschenk, J.D., Ph.D., can be reached at (703) 308-0452. Any inquiry of a general nature or

relating to the status of this application should be directed to the Group 1600 receptionist whose telephone number is (703) 308-0196.

Respectfully,

Jeffrey S. Parkin, Ph.D.
Patent Examiner
Art Unit 1648

15 January, 1999

LAURIE SCHEINER
PRIMARY EXAMINER